CHAPTER TWO **Roadways**

OVERVIEW

For each performance measure, the following agencies collected applicable data:

- Duration and Amount of Congestion—CMA, in even numbered years and MTC, annually
- Average Speed—CMA, in even numbered years
- Travel Times—CMA, in even numbered years
- Road Maintenance—MTC, annually
- Accidents—Caltrans, annually

MEASURING ROADWAY PERFORMANCE

Duration and Amount of Congestion

The duration and amount of congestion in Alameda County is measured through the Level of Service (LOS) and vehicle hours of delay (VHD) analysis. The VHD analysis is followed by a list of the Top 10 most congested corridors.

Level of Service

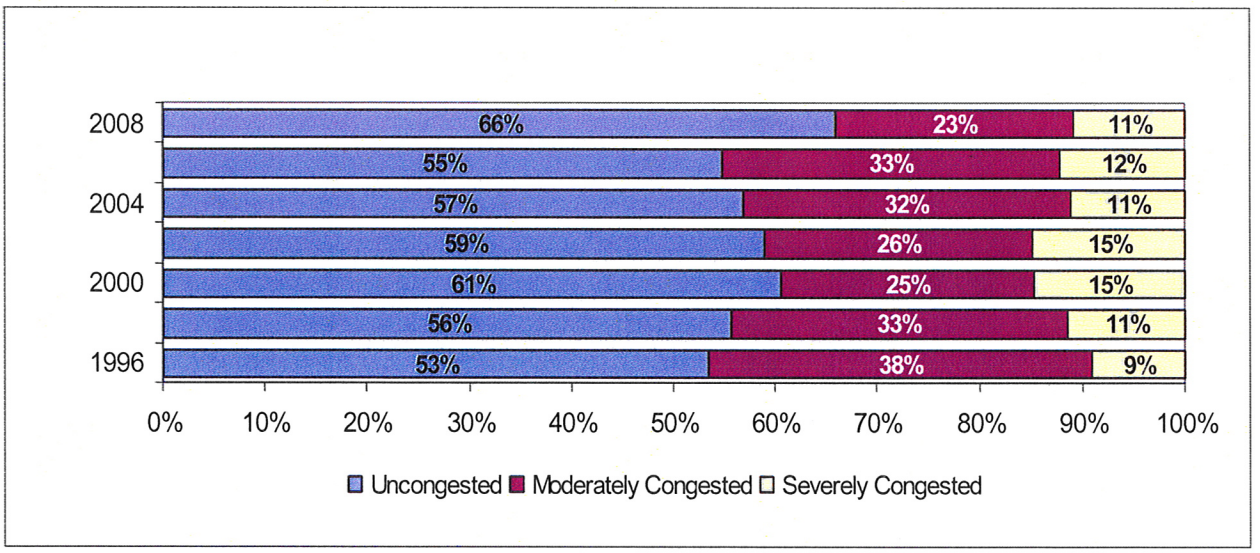
Biennially, the CMA monitors the amount of congestion by measuring the LOS on all freeways and arterial roadways designated in the CMP-designated network. (See Appendix A-1 for the CMP-designated roadway network.) The CMA last monitored LOS in 2008. Based on travel speeds, LOS is categorized into six levels: A through F. LOS A represents no congestion and LOS F represents the most congestion. (See Appendix A-2 for LOS details). As shown in Figures 1 and 2, the overall 2008 LOS on freeways has improved and arterials have remained steady since 2006. Highlights of 2008 LOS Monitoring Report[1] findings include:

- The percentage of uncongested freeways—or those performing at LOS A, B and C—increased significantly, from 55 percent in 2006 to 66 percent in 2008.
- 2008 showed the highest rate of freeways performing at LOS A since 2000, which was at the peak of the dot com period. Decreased levels of congestion were likely due to the downturn in the economy combined with increased gas prices.

[1] For detailed information see *2008 Level of Service Monitoring Report.*

- The percentage of moderately congested freeways—or those performing at LOS D and E—decreased from 33 percent to 23 percent. The percentage of those performing at LOS F remained relatively stable.
- Average speeds on four freeway corridors increased notably from 2006 to 2008:
  - I-80 westbound from Central to Tollgate: Average speed increased from 27.7 mph (LOS F) in 2006 to 36.2 mph (LOS E) in 2008.
  - I-880 southbound from I-980 to Dixon Landing: Average speed increased from 37.1 mph (LOS E) to 47.6 mph (LOS D).
  - I-580 eastbound from I-80/I-580 Split to I-238: Average speed increased from 39.3 mph (LOS E) to 47.0 mph (LOS D).
  - SR-13 northbound from Mountain Boulevard to Hiller Drive: Average speeds increased from 38.8 mph (LOS E) to 51.0 mph (LOS C).
- Conversely, average speeds decreased on I-680 northbound from Scott Creek to Alcosta Boulevard from 52.9 mph (LOS C) in 2006 to 43.4 mph (LOS D) in 2008.
- Other corridors either showed modest increases or decreases in speeds—with the exception of SR-24 westbound from Fish Ranch Road to I-580, a reverse commute direction. Speeds in this corridor have remained very consistent since 2004, ranging between 58.4 and 58.8 mph.

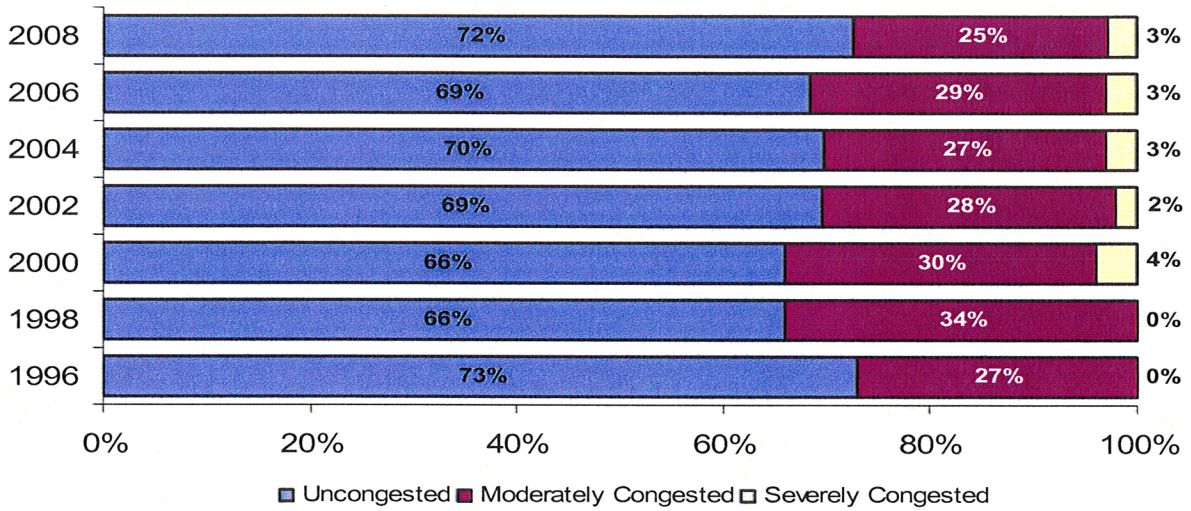
Figure 1—Congestion on Freeways (average afternoon commute)



Source: Alameda County CMA *LOS Monitoring Reports*, 1996-2008

Note: Congestion is measured by Level of Service.

Figure 2—Congestion on Arterials (average afternoon commute)



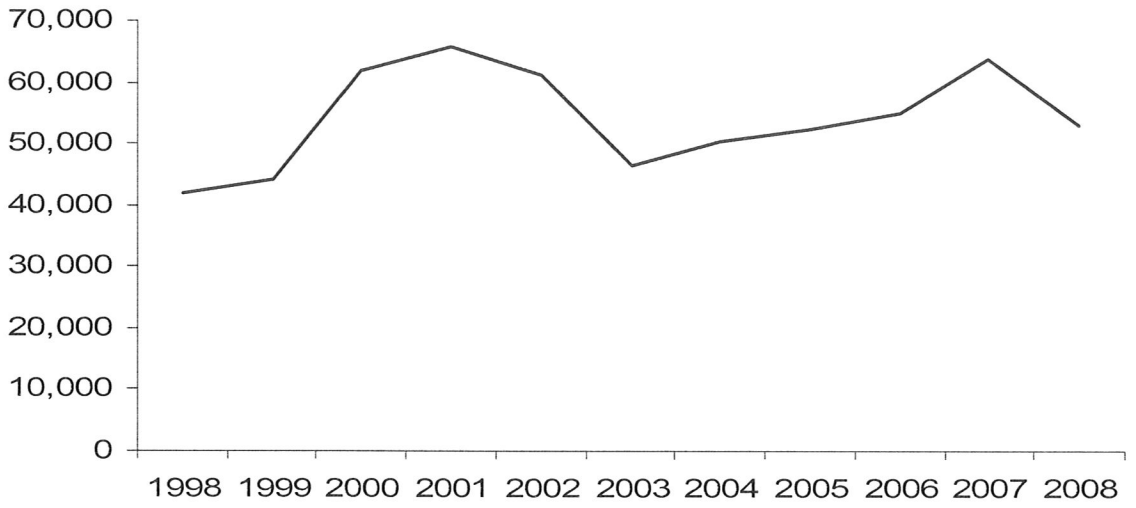
Source: Alameda County CMA *LOS Monitoring Reports*, 1996-2008
Note: Congestion is measured by Level of Service.

Vehicle Hours of Delay

Since 2004, MTC has collected information on travel time for freeways in Alameda County and the Bay Area. The data is collected to identify locations of congestion, time of day that congestion occurs and the length of congestion (duration). Changes in VHD over the years are directly correlated with changes in congestion.

In 2008, congestion in Alameda County decreased by 17 percent compared to the previous year. While the amount of congestion in the county has increased five percent since 2003, the reduction in 2008 began to reverse this upward trend. Still, congestion in Alameda County continued to account for nearly 40 percent of the Bay Area's total congestion. The total VHD in Alameda County (53,000) is nearly double that of the second most congested county, Santa Clara. Figure 3 identifies the VHD on all county freeway facilities between 1998 and 2008.

Figure 3: Vehicle Hours of Delay on Freeways



Source: MTC (2004-2008 Congestion data) and Caltrans District 4 1996-2003 Highway Congestion Monitoring Data.

Top 10 Congested Corridors

Appendix A-3 shows a map of the Top 10 most congested corridors in Alameda County. Data collected from MTC and Caltrans reveals about a 20 percent drop in overall congestion from 2007, likely reflecting the economic downturn. Key highlights include:

- The top three most congested locations in 2008 have retained their ranking since 2005: mornings on westbound I-80; afternoons on eastbound I-580; and mornings on westbound I-580.
- Mornings on westbound I-80 continues to retain its rank as the most congested corridor in the Bay Area Region.
- VHD eastbound I-580 in the afternoon decreased by 30 percent in 2008.
- Of the Top 10 congested corridors in Alameda County, congestion on I-80 accounts for 46 percent of delay and I-580 accounts for 33 percent of delay.
- Four segments of I-80 occupy spots on the Top 10 list for Alameda County.
- Three segments of I-580 occupy spots on the Top 10 list.
- Westbound I-580, Crow Canyon Road to I-580/I-238 off-ramp in the morning made the list for the first time, rising from 14th in 2007 to 7th in 2008.
- Westbound I-80, from Gilman to the MacArthur Maze in the afternoon also made the list for the first time, moving from 13th in 2007 to 9th in 2008.

- Of the eight roadway segments on both 2007 and 2008 Top 10 congested list, three show a decrease in the duration of congestion, two of them remained stable and three recorded an increase.
- The largest decrease in the duration of congestion was on eastbound I-80, from east of Sterling Street to Powell Street in Emeryville, for the afternoon peak period. This segment was congested for two hours and 30 minutes less than it was in 2008, a shift from six hours and 40 minutes to nearly four hours.
- Three roadway segments showed increased congestion in 2008 compared to 2007: Westbound I-80 from Powell Street to the Bay Bridge (45 minutes); eastbound SR-92 (50 minutes); and eastbound SR-24 (58 minutes).

Table 1 shows the VHD for the top 10 locations for 2008, along with a comparison of how the segments ranked in recent years.

Table 1—2008 Top 10 Congestion Corridors in Alameda County (VHD)

2008 RANK	LOCATION	2008 VHD	2007 RANK	2006 RANK	2005 RANK
1	**Westbound I-80 *** Powell Street to Bay Bridge (morning)	7,800	1	1	1
2	**Eastbound I-580** I-680 to N. Livermore Avenue (afternoon)	5,250	2	2	2
3	**Westbound I-580** I-205 to Airway Boulevard/SR 84 (morning)	4,240	3	3	3
4	**Eastbound I-80** E. of Sterling on-ramp to E. of Powell (afternoon)	3,530	6	5	5
5	**Eastbound SR-92** Clawiter Road to I-880 (afternoon)	3,200	4	4	4
6	**Westbound I-80 *** MacArthur Maze to 5th Street, S.F. (afternoon)	3,020	8	6	6
7	**Westbound I-580** Crow Canyon to I-580/I-238 off-ramp (morning)	2,530	14	21	7
8	**Eastbound SR-24** I-580 to Camino Pablo (afternoon)	2,500	10	8	8
9	**Westbound I-80**	2,230	13	6	9

	Gilman to MacArthur Maze (afternoon)				
10	**Northbound I-880**	1,990	7	14	10
	Decoto to Tennyson (afternoon)				

Source: MTC
Note: * Indicates portion of segment falls outside Alameda County.

Average Speed

The average vehicular travel speed is measured over specified segments in each lane during the peak period. Although the CMA is required to collect data biennially for the afternoon peak period, the agency also collects similar data for the morning peak period. Figure 4 indicates that over the last 10 years, average speeds on freeways during the afternoon peak remained relatively stable, while travel during the morning peak has steadily increased since 2000.

Between 2006 and 2008, surveys showed 3.2 miles per hour increase in average speeds on the freeway system to 51 miles per hours. The average speed on arterials increased 1.6 miles per hour (to 52 miles per hour) during the afternoon peak period. The morning peak period experienced an increase of 2.4 mph (to 26 miles per hour) on freeways. The freeway corridors with slower speeds may have been attributed to construction activity in the county. Also, in some instances, as a result of splitting longer segments into shorter ones, consistent with the adopted 2007 CMP, some shorter segments that had been part of an average longer segment, had decreased travel times.

Figure 4: Average Vehicle Speed (in miles per hour)

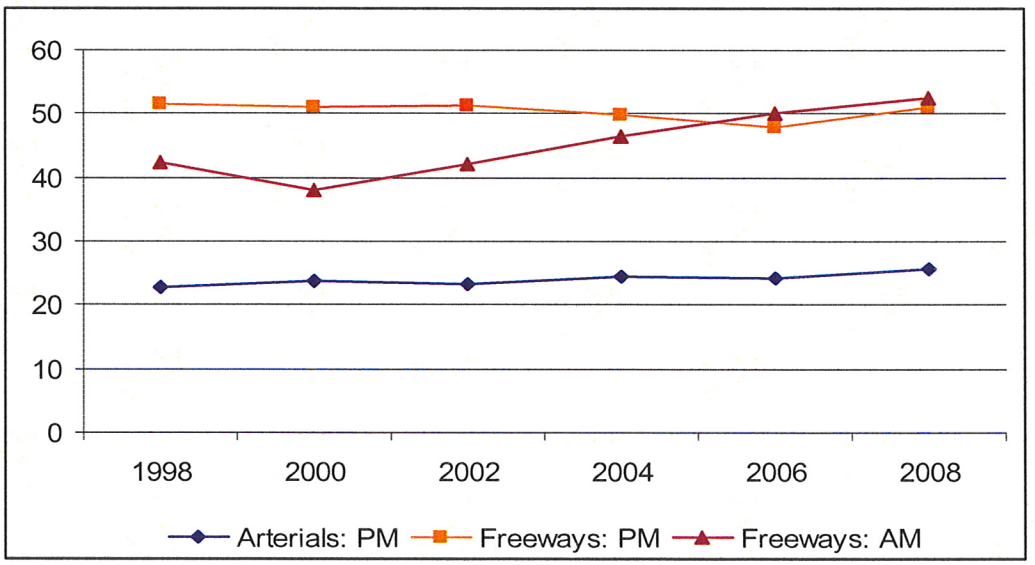


Table 2 compares average vehicle speeds for selected segments during the morning peak. Notable observations include:

- Approximately one-half of the segments showed increases in average speed in 2008 compared to 2006. This trend is likely due to the economic downturn.
- The greatest increase in average speed was on northbound I-880, from SR-262 to Dixon Landing Road, increasing almost 37 mph, from 20.3 to 57.1 miles per hour.

Table 2—Average Speeds in the Morning Commute (in miles per hour)

SEGMENT	2000	2002	2004	2006	2008
I-880 Southbound					
· Marina to A Street	38.2	50.1	36.5	27.3	
Split into two new segments:					
· Marina to 238 WB					33.9
· I-238 to A Street					24.1
· A Street to SR-92	15.9	21.9	40.6	32.0	29.4
· SR-92 to Tennyson	31.3	42.5	48.6	38.3	30.3
· Tennyson to Alvarado-Niles	28.8	46.2	49.1	43.8	38.8
· SR-262 to Dixon Landing	11.4	N/A	21.4	20.3	57.1
I-880 Northbound					
· Alvarado-Niles to Tennyson	32.9	31.3	33.7	24.4	26.2
· Tennyson to SR-92	45.9	41.4	53.3	41.5	45.3
· SR-92 to A Street	36.3	44.8	42.5	45.7	52.9
· A Street to Marina	57.3	55.8	44.9	50.7	59.0
I-238 Westbound					
· I-580 to I-880	18.0	22.5	20.2	15.4	
I-680 Southbound *					
· Alcosta to I-580	57.7	63.0	69.0	64.3	67.4
· I-580 to Bernal*	64.6	63.5	67.1	54.7	*
· I-580 to Stoneridge (new)					59.1
· Bernal to Niles (SR-84)*	56.8	46.2	66.0	55.6	*
· Bernal to Sunol Boulevard (new)					41.3
· Sunol Boulevard to SR-84 (new)					51.0
· Niles to Mission*	17.6	28.2	61.0	57.7	*
Niles to Andrade					46.9
Andrade to Sheridon					55.7
Sheridon to Vargas					41.6
Vargas to SR-238					38.1
I-580 Westbound					
· Portola to Tassajara*				30.8	*
Portola to SR84	41.9	32.4	27.5		29.4
SR-84 to El Charro					40.9
El Charro to Tassajara					52.8
· Tassajara to I-680*	63.8	44.0	50.6	46.1	54.3*

Source: Alameda County CMA, *LOS Monitoring Reports*

*Routes not studied in 2008 because they were broken into smaller segments.

Travel Time

The CMA has compared travel times for automobile and transit for 10 origin/destination pairs within Alameda County since 1996. The results, shown in Table 3, indicate that overall both automobile and transit travel times have improved compared to 2006. Travel times were between 2 to over 5.5 times longer for transit than automobile travel. Most transit delays can be attributed to transfer between lines. Improvements in automobile travel time in nine out of the 10 pairs can be attributed to the economic downturn and record high gasoline prices.

Table 3—Travel Times Between Destinations (afternoon peak in minutes)

ORIGIN-DESTINATION		2000	2002	2004	2006	2008
Hayward to Newark	*Car*	22	22	16	19	14
Kaiser Medical Center to Thornton Avenue	*Transit*	92	79	90	86	74
Emeryville to Berkeley	*Car*	26	25	28	22	22
Chiron to Marin Circle	*Transit*	NA	56	53	45	70
	Bicycle	30	30	33	30	32
Hayward to Livermore	*Car*	45	49	61	61	54
Cal State University to Delaware Way	*Transit*	152	141	120	113	143
Oakland to San Leandro	*Car*	29	32	41	34	27
Downtown to Chapel Avenue	*Transit*	64	56	70	66	78
Fremont to Pleasanton	*Car*	34	33	27	39	26
NUMMI Plant to Hansen and Valley Avenue	*Transit*	122	125	146	181	145
Fremont to San Jose	*Car*	55	49	30	33	27
Thornton Avenue/Fremont Blvd to Fujitsu	*Transit*	104	118	94	111	82
Fremont to San Jose	*Car*	35	34	27	25	23
Thornton Avenue/Fremont Blvd to HOV Lane (Transit Service to be added when facilities in place)	*Transit*	NA	NA	NA	NA	NA
Oakland to Pleasanton	*Car*	60	60	45	57	41
Federal Building to Hansen and Valley Avenue in Pleasanton	*Transit*	96	70	77	75	107
Fremont to Alameda	*Car*	57	53	64	52	43
Washington Hospital to Searidge	*Transit*	74	70	123	102	94

ORIGIN-DESTINATION		2000	2002	2004	2006	2008
Alameda to Oakland	*Car*	17	21	22	21	22
Naval Air Station to College Avenue	*Transit*	47	45	45	43	51

Source: Alameda County CMA, 2000-2008 *LOS Monitoring Reports*

Road Maintenance

MTC monitors the pavement condition of local streets by weighting the average Pavement Condition Index (PCI) for the general pavement condition within defined networks. This monitoring is conducted for the entire county and for each city within the county. Roadway types include MTS and non-MTS, including arterials, collectors and residential streets.

As shown in Table 4, the PCI uses a classification scale weighted between 0 and 100, with the highest rating being new pavement.

Table 4—Rating of Pavement Condition

CLASSIFICATION	PCI RANGE
Excellent Condition	PCI of 90-100
Very Good Condition	PCI of 75-89
Good Condition	PCI of 60-74
Fair Condition	PCI of 45-59
Poor Condition	PCI of 25-44
Very Poor Condition	PCI below 25

Alameda County Facilities

Approximately 79 percent of all Alameda County roadways were reported to be in fair to excellent condition in FY 2008-2009. Pavement in poor to very poor condition represented about 21 percent of the county's roadways. MTC reported that the average PCI for Alameda County roadways for all 15 jurisdictions was 66, nearly the same as reported last year (65). This average covered a range from 56 to 79 (see Appendix A-4).

State Facilities

Caltrans is responsible for maintaining the state highways and freeways system. Under the state system, assessment of pavement condition differs from the PCI. Since 1978, the types of ride (i.e., rough ride) and structural problems have been monitored. The combination of these two factors is the initial step in determining if a segment should be scheduled for improvement.

Caltrans has prepared a 10-year highway and freeway maintenance plan, as required by SB 45. The plan identifies roads needing rehabilitation and a schedule for completing the work. Goals of the plan are to:

- Reduce the lane mile backlog of pavement in poor condition;
- Switch from a "worst-first" to "preventive maintenance" strategy;
- Use long life pavement strategies; and
- Integrate maintenance and rehabilitation work.

The 2008 survey of state facilities needing rehabilitation in Alameda County provided information for freeways. Information for the majority of state routes was not available for 2008. The 2008 survey showed that 84 lane-miles of freeway need of rehabilitation, a 45 percent reduction from the previous year. The greatest reduction in freeways needing rehabilitation was on I-580. The number of lane miles in need of rehabilitation by route in Alameda County is shown in Appendix A-5.

Local Streets, Roads and Bridge Shortfall

Appendix A-6 shows the annual local streets, roads and bridges funding shortfall over the next 25 years, or through 2035. It shows that Alameda County has $1.6 billion shortfall, or 21 percent of the entire shortfall in the nine-county Bay Area Region.

Accidents

Appendix A-7 details the number of accidents on Alameda County freeways in 2008 compared to previous years. Accident rates in the county have generally reduced, with the exception of I-980 and I-238, which had percent increases of 14 and eight, respectively. The accident rate on I-238 may have been affected by ongoing construction (roadway widening). Three roadways had substantial declines in the percent of accidents: SR-84 fell 30 percent, I-680 fell 25 percent and I-580 fell 24 percent.

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